



Regional Industry Caribou Collaboration

The Regional Industry Caribou Collaboration (RICC) is a group of energy and forestry companies working collaboratively across tenure and lease boundaries focused on northeastern Alberta caribou ranges.

Caribou recovery is a shared government, public and private sector responsibility, led by Government¹. Lease and tenure specific mitigations undertaken by companies are important to minimize local impacts on individual animals. Population-level benefits stem from range-level mitigations that require collaboration and action beyond individual company's boundaries.

MISSION

Enable the restoration of caribou habitat and recovery of caribou populations through collaborative, range-based efforts.

GOAL

Participate in collaborative research and active, science-based adaptive management activities within the defined RICC study area.

OBJECTIVES

- Coordinate industry restoration of disturbance in priority areas
- Support and lead scientific research on caribou ecology and caribou-predator-landscape relationships to identify priority issues and/or priority areas
- Support and lead investigative trials on restoration methods, effectiveness, and wildlife responses, and make recommendations for broader implementation

Boreal Woodland Caribou in Northeastern Alberta

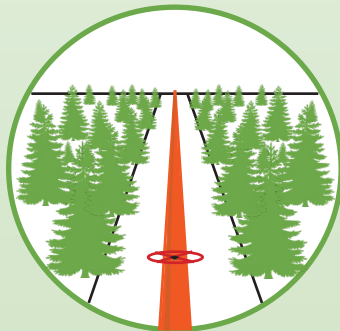
Boreal woodland caribou are listed as Threatened under Canada's Species at Risk Act (SARA). Many complex and interconnected factors contribute to the decline of boreal caribou, including natural and human-caused landscape changes, such as land use, forest fires and warming climate, which are resulting in increased predation on caribou.



The Federal Recovery Strategy has identified a minimum undisturbed habitat target of

65% (or a maximum 35% disturbed)

over 100 years, in order for caribou populations to have a 60% chance of being naturally self-sustaining, and is relying on provincial and territorial jurisdictions to develop range plans to meet this target for every range.



Disturbance is defined as human footprint, plus a

500 m

buffer, along with areas that have burned over the last 40 years.

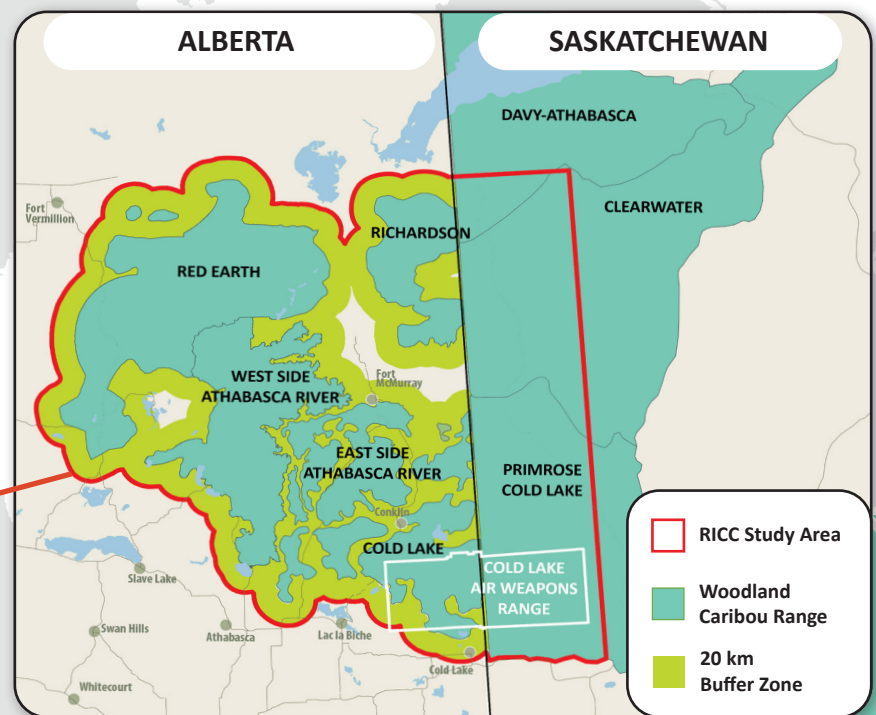


Disturbance levels in northeast Alberta caribou ranges:

Range	% Undisturbed ²
Cold Lake	13
East Side Athabasca River	16
West Side Athabasca River	28
Red Earth	28
Richardson	13

RICC Study Area

Within Alberta, the RICC study area originally focused on the Cold Lake and East Side Athabasca River (ESAR) caribou ranges, but was expanded in 2019 to also include the West Side Athabasca River (WSAR), Red Earth and Richardson boreal caribou ranges as this is where RICC industry partners have operations and/or hold mineral and forestry tenure. RICC focuses on the Alberta caribou ranges as this is where RICC industry partners have operations. The RICC study area also includes portions of adjacent boreal caribou ranges in Saskatchewan, which provide reference areas for comparison. A 20 km buffer is included around the Alberta caribou ranges to incorporate adjacent areas, from which effects may influence caribou ranges.



Partner With Us

RICC members include Canadian Natural, Alberta-Pacific Forest Industries Inc., Athabasca Oil Corporation, Cenovus Energy Inc., CNOOC, Imperial, MEG Energy and Suncor. We work with academia, the Government of Alberta, the Alberta Biodiversity Monitoring Institute (ABMI) Caribou Monitoring Unit and other organizations. RICC officially became a Canada's Oil Sands Industry Alliance Joint Industry Project in 2014.

Learn more about our collaboration and how to become a member at:

www.cosia.ca/initiatives/land/regional-industry-caribou-collaboration

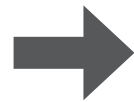
¹ Government of Alberta. 2011. A Woodland Caribou Policy for Alberta. Alberta Environment and Parks. Edmonton, AB.

² Environment and Climate Change Canada. 2019. Anthropogenic Disturbance Footprint Within Boreal Caribou Ranges Across Canada- As Interpreted From 2015 Landsat Satellite Imagery. Environment and Climate Change Canada. Ottawa, ON.

Habitat Restoration - By The Numbers

1,300 km

Since 2012, approximately **1,300 km** of seismic lines and other linear features were actively treated for restoration, and another **437 km** have been assessed and found to already be adequately re-vegetated naturally.



This equates to approximately **1,000 km²** of undisturbed habitat that is on the pathway to being restored in the Cold Lake and ESAR caribou ranges.

226 km

In 2019, RICC member companies treated **226 kms** of legacy seismic lines.

268 km

In 2019, RICC developed an operational restoration treatment plan for six townships in ESAR. Of the **268 km** assessed, treatment prescriptions were identified for **140 km**. This plan is implementation-ready.

RICC Technical Advisory Workshop

RICC hosted a two-day workshop with caribou experts to assess how RICC projects align with its goals, and highlight knowledge gaps to inform future projects. While the participants determined RICC projects were meeting objectives, three main suggestions for future work emerged:

- Expand restoration to test effectiveness in additional areas, while continuing to learn from existing programs;
- Summarize learnings from previous restoration programs; and
- Standardize data collection to benefit the larger scientific community.

Supporting Science to Understand Caribou Declines and Caribou-Alternate Prey-Predator-Landscape Relationships

Ecosystem Monitoring Camera Program

The Ecosystem Monitoring Camera Program was designed to evaluate wildlife response to caribou management actions and the relative influence of landscape change by addressing two key areas of focus.

1. Evaluate deer, moose and caribou population response to various caribou management actions in different caribou ranges over time. The combinations of management actions considered are:
 - Predator reductions only
 - Predator reductions and large-scale habitat restoration
 - No predator reduction or large-scale habitat restoration
 - Reference areas with low levels of human land-use
2. Investigate the relative influences of human land-use and climatic factors on white-tailed deer populations, an invasive species that is a key driver of predator abundance. We are comparing deer densities from cameras at similar latitudes (i.e. climate) with varying levels of human disturbance.



Bear Camera Collaring Pilot Program

Black bear predation of caribou calves in this region is poorly understood. This pilot program evaluated the capability of new generation camera collars to capture predation of caribou by black bears.

- Four collars deployed in 2019 successfully collected high-quality sound and video, and there were no instances of camera failure.
- Videos were able to successfully identify kills of smaller sized prey including a beaver, a fish and potentially a neonate calf, though no caribou kills were confirmed.

The project will expand in coming years to increase the sample size of camera-collared bears, with the goal of estimating the total number of caribou calves killed by bears. Such information is critical for informing decisions focused on recovering caribou populations.

Corridors or Risk: Understanding Multi-Species Response to Linear Features

The researchers combined habitat selection and movement rates to understand how linear features, like seismic lines, affect caribou, moose, bear and wolf behavior. While all four species typically moved faster on linear features, predators selected them while prey species avoided them. This suggests that linear features act as travel corridors to predators, but are perceived as risk to prey.

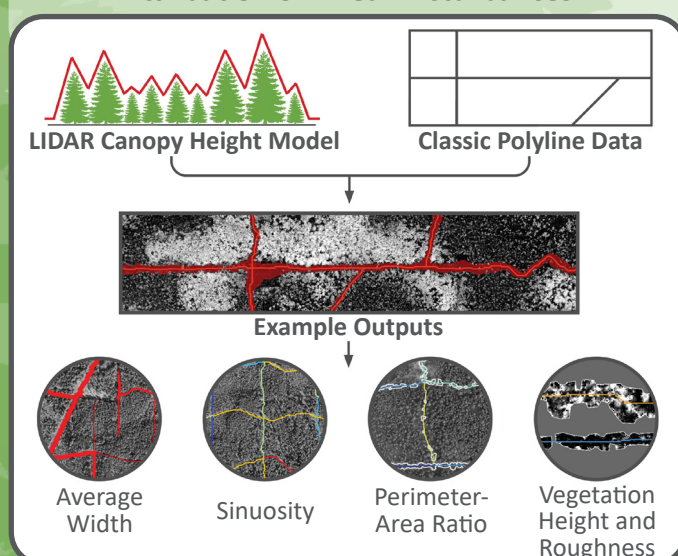
Given prey avoid these features, previous studies may have over-estimated the influence of seismic lines on encounter rates. However, predators may still use these features as corridors to travel between patches of prey.

Predicting Habitat Restoration Effectiveness Using Predator-Prey Simulations

Simulations estimated that caribou density could increase 2.5-fold if all linear features (including permanent ones like railways) were restored and 1.6-fold if only legacy seismic lines were restored. This suggests that extensive restoration across caribou ranges could benefit caribou populations. Future work could evaluate population-level responses to various levels of restoration intensity and extent, increasing our understanding of these relationships and our ability to accurately plan effective mitigations.

Supporting Trials and Science on Restoration: Boreal Ecosystem Recovery Assessment (BERA)

The Forest Line Mapper: A Semi-Automated Open-Sourced Tool for Enhancing Mapping and Attribution of Linear Disturbances



Under what conditions can we detect conifer seedlings for establishment surveys at the operational landscape scale?

